

[NAME OF THE DOCUMENT] CLAIMS

What is claimed is:

[Claim 1]

A group supervisory control apparatus for an elevator system in which an upper car and a lower car capable of moving freely with respect to each other in one and the same shaft are operating, said apparatus comprising:

a hall destination floor registration device arranged corresponding to each of halls on service floors of said upper car and said lower car;

a zone setting section that sets individual priority zones for said upper car and said lower car, respectively, and a common zone for said upper car and said lower car;

an entry determination section that determines whether said upper car and said lower car can come into said common zone;

a safe waiting section that makes said upper car and said lower car wait safely in accordance with the result of the determination of said entry determination section;

a shunting section that makes said upper car or said lower car shunt to a shunting floor as required at the instant when said upper car or said lower car finished its service;

, a confinement time prediction section that predicts a passenger confinement time generated due to safe waiting when said upper car or said lower car is assigned to a destination call generated in one of said halls;

an evaluation value calculation section that calculates various evaluation values including said waiting time or said confinement time upon assignment of said upper car or said lower car; and

an assignment section that determines a final assigned car for said destination call based on the calculation result of said evaluation value calculation section;

wherein said hall destination floor registration device has a function of

registering destination floors and a function of providing a predictive indication of a response car for each registered destination floor to passengers.

[Claim 2]

The elevator group supervisory control apparatus as set forth in claim 1, characterized in that

said assignment section operates in such a manner that

when the generation floor of a new destination call is in the priority zone of said upper car or when the direction of a destination floor according to said destination call is an up direction in said common zone, said upper car is made an assignment candidate for said destination call, and

when the generation floor of said new destination call is not in the priority zone of said upper car, and when the direction of a destination floor according to said destination call is not an up direction in said common zone, said lower car is made an assignment candidate for said destination call, and

a candidate car, of which said various kinds of evaluation values become minimum among those of said assignment candidates, is determined as the final assigned car.

[Claim 3]

The elevator group supervisory control apparatus as set forth in claim 2, characterized in that

said confinement time prediction section operates.

to calculate a first predicted arrival time to each floor of each candidate car included in said assignment candidates with said new destination call temporarily assigned thereto without considering said confinement time,

to calculate a second predicted arrival time to each floor of an opponent car in the same shaft as that in which said each candidate car is arranged, and to correct said first and second predicted arrival times by using a confinement time for said upper car or said lower car.

[Claim 4]

The elevator group supervisory control apparatus as set forth in any one of claims 1 through 3, characterized in that

said confinement time prediction section operates in such a manner that

in case where said upper car and said lower car exist in their dedicated zones, respectively, and when there is an entry schedule for them to enter said common zone,

a comparison is made between respective entry schedule time points to said common zone of said upper car and said lower car, and said confinement time is calculated by subtracting the entry schedule time point of one of said cars whose entry schedule time point is later than that of the other car from a reversal predicted time point at which the other car whose entry schedule time point is earlier than that of the one car is reversed in said common zone.

[Claim 5]

The elevator group supervisory control apparatus as set forth in any one of claims 1 through 3, characterized in that

said confinement time prediction section operates in such a manner that

in case where there is an entry schedule for both of said upper car and said lower car to enter said common zone, and

in case where one subject car of said upper car and said lower car exists in its dedicated zone, and the other opponent car exists in said common zone, with the direction of operation of said opponent car being a direction to approach said subject car,

when the entry time point to said common zone of said subject car is earlier than the reversal time point in said common zone of said opponent car,

said confinement time is calculated by subtracting the entry time point of said subject car from the reversal time point of said opponent car.

[Claim 6]

The elevator group supervisory control apparatus as set forth in any one of claims 1 through 3, characterized in that

said confinement time prediction section operates in such a manner that

in case where one subject car of said upper car and said lower car exists in its dedicated zone, and the other opponent car exists in said common zone, with the presence of an entry schedule to said common zone of said subject car,

when the direction of operation of said opponent car is a direction to move away from said subject car, with said opponent car reentering said common zone,

a comparison is made between respective entry time points to said common zone of said subject car and said opponent car, and

said confinement time is calculated by subtracting the entry time point of one of said cars whose entry time point is later than that of the other car from a reversal time point at which the other car whose entry time point is earlier than that of the one car is reversed in said common zone.

[Claim 7]

The elevator group supervisory control apparatus as set forth in any one of claims 1 through 3, characterized in that

said confinement time prediction section operates in such a manner that

in case where both of said upper car and said lower car exist in said common zone and are operated to move in one and the same direction, and

in case where there is a reentry schedule for one subject car of said upper car and said lower car lying at an operating direction side to reenter said common zone,

when the reentry time point to said common zone of said subject car is

earlier than the reversal time point of the other opponent car of said upper car and said lower car,

said confinement time is calculated by subtracting the reentry time point of said subject car from the reversal time point of said opponent car.

[Claim 8]

The elevator group supervisory control apparatus as set forth in any one of claims 1 through 3, characterized in that

said confinement time prediction section operates in such a manner that

in case where both of said upper car and said lower car exist in said common zone, with the directions of operation of said upper car and said lower car being an up direction and a down direction, respectively,

when there is a reentry schedule for both of said upper car and said lower car to reenter said common zone,

a comparison is made between respective reentry schedule time points to said common zone of said upper car and said lower car, and said confinement time is calculated by subtracting the reentry time point of one of said cars whose reentry time point is later than that of the other car from a rereversal time point at which the other car whose reentry time point is earlier than that of the one car is reversed in said common zone.